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EXAMINER	
SHAH, PARAS D	

ART UNIT	PAPER NUMBER
2626	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/722,038	PECK, JEFF	
	Examiner	Art Unit	
	PARAS SHAH	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/30/2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,8-16 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,8-16, and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the Arguments and Amendments filed on 03/30/2009. Claims 1-3, 5, 8-16, and 20 remain pending and have been examined. The Applicants' remarks have been carefully considered, but they are not persuasive and do not place the claims in condition for allowance. Accordingly, this Action has been made FINAL.

2. All previous objections and rejections directed to the Applicant's disclosure and claims not discussed in this Office Action have been withdrawn by the Examiner.

Continued Examination Under 37 CFR 1.114

3. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Response to Amendments and Arguments

4. Applicant's arguments, see pages 6-8, filed on 03/30/2009 with respect to the rejection(s) of claim(s) 1, 9, and 14 under Gentle in view of Dowdal have been fully considered and are not persuasive. Please see below claim mapping for the newly added limitations "during said transmission" and "adding said average packet delay time to each of the plurality of packets prior sending the plurality of packets to a voice codec".

The newly added limitations are taught by the previous combination of references Gentle in view of Dowdal. The limitation of the "buffering said audio information in a jitter buffer during said transmission" is taught in Gentle, the primary reference. In paragraphs, [0051], [0052], [0042], [0061], where the packets are received by the VAD based on incoming stream and the packets and packet structure and sends it to agent 232 where a packet is received one at a time and the buffer receives the packets to be buffered upon receipt. It is obvious to one of ordinary skilled in the art that as the VAD outputs the packets (see Figure 2, output of 220) and sends it to the second device (Figure 3, input into buffer 302) that when new audio data is received by the first device that processing by the VAD will occur while the previous packets are being buffered. Support for this in Gentle is seen in [0052], where the VAD monitors for new data.

Further support for this is seen in paragraph [0051], where the sending of the jitter delay from the adaptive playout unit (see Figure 3), the determining (VAD decision) is based on the jitter of the network and is needed when making VAD decision on the incoming packet.

The second limitation, specifically, "adding said average packet delay time to each of the plurality of packets prior to sending the plurality of packets to an application" is taught by the secondary reference Dowdal. In see col. 2, lines 42-44 and col. 3, lines 34-41, the delay is adjusted based on the calculated delay value. It is implied in Dowdal that the calculated delay is added to each network packet (either a negative or positive value is applied), which allows for the increase in delay or the elimination. Further, Gentle teaches the use of the average packet delay time prior to sending to a voice codec, where in paragraphs [0075], suggest that the adaptive playout unit that adjusts the delay for each of the packets can be reversed. Hence, the packets are adjusted based on a delay and then sent to a codec.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 5, 7, 9, 13, 14, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gentle et al. (US 2004/0073692) in view of Dowdal (US 7,346,005).

As to claims 1 and 14, Gentle teaches a method, comprising:

receiving a plurality of packets (see [0036], VAD monitors packet structures in incoming digital voice stream) with audio information (see Abstract, audio stream, also see [0036], voice) (e.g. Applicant defines audio information to include voice and silence (see page 4, [0006], lines 3-5). Audio packets are retrieved.);

determining by a voice activity detector (see [0036], VAD 220) whether said audio information represents voice information (see [0036], VAD determines if voice activity is present) (e.g. The determination of the audio information is found by the voice activity detector 220.); and

buffering said audio information in a jitter buffer (see Figure 3, buffer manager 330) during said determination (see [0051], [0052], [0042], [0061], where the packets are received by the VAD based on incoming stream and the packets and packet structure and sends it to agent 232 where a packet is received one at a time and the buffer receives the packets to be buffered upon receipt) (e.g. It is obvious to one of ordinary skilled in the art that as the VAD outputs the packets (see Figure 2, output of 220) and sends it to the second device (Figure 3, input into buffer 302) that when new audio data is received by the first device that processing by the VAD will occur while the previous packets are being buffered. Support for this in Gentle is seen in [0052], where the VAD monitors for new data) (e.g. The sending of the jitter delay from the adaptive playout unit further supports the determining (VAD decision) and jitter buffering

being done concurrently.). The reference also teaches the use of a computer entailing a computer readable medium for the above limitations (see [0030])) (e.g. Audio information is buffered.).

wherein said determining comprises:

receiving frames of audio information at a voice activity detector (see [0036], packet structures are received);

measuring at least one characteristic (see [0051], [0036], and [0004], where the Reference discloses convention technique and shows an alternative based on silence threshold to determine voice activity and energy level measurements) of said frames (see [0036], packet structure)

determining a start of voice information based on said measurements (see [0052], VAD 220 determines silence or nonsilence as well as beginning and endpoints); and

determining an end to said voice information based on said (see [0052], VAD 220 determines silence or nonsilence as well as beginning and endpoints) and a delay interval (see [0051], timing measurement module used to determine jitter by VAD 220); and

sending the adjusted packets to a voice codec (see [0075], where the adaptive playout unit is placed before the codec and in [0043], [0045], the jitter timing module has an adaptive control of FIFO delay) (e.g. It would have been obvious to one of ordinary skilled in the art to have used this embodiment in

order to for the playout unit to receive encoded packets rather than decoded packet, where additional delay is present due to processing.).

adjusting of the delay interval (see [0043], timing measurement module allows adaptive control of FIFO delay)

However, Gentle does not specifically teach the measuring, adding, and adjusting of the delay interval based on an average packet delay time.

Dowdal teaches

measuring an average packet delay time by said jitter buffer (see Dowdal, (see col. 4, lines 33-60, delay between packets are calculated and a calculated running average is maintained in order to reset the value of the FIFO buffer for playout)

adding said average packet delay time to each of the plurality of packets prior to sending the plurality of packets (see col. 2, lines 42-44 and col. 3, lines 34-41, where the playout delay is adjusted based on the calculated delay value. It is implied in Dowdal that the calculated delay is added (either a negative or positive value is applied).

the adjusting said delay interval to correspond to an average packet delay time (see col. 4, lines 33-60, delay between packets are calculated and a calculated running average is maintained in order to reset the value of the FIFO buffer for playout).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the voice based packet network as

taught by Gentle with the use of a delay based on the average packet delay time as taught by Dowdal. The motivation to have combined the two references involves the improvement in audio quality for effective playout of audio by minimizing jitter and delay (see Dowdal, col. 1, lines 15-21).

As to claim 5, Gentle in view of Dowdal teaches all of the limitations as in claim 1, above.

Furthermore, Gentle teaches said characteristic comprises an estimate of an energy level for said frame (see [0051], energy level measurement can be employed by VAD 220) (e.g. An energy level is used to determine if speech is present.).

As to claim 9, Gentle teaches a system comprising:

an antenna (see [0030], radio, telephone, wired analog, etc.)(e.g. It is inherent that digital phones consist of built-in antenna as well as a receiver for hearing audio information and transmitter for transmitting information.);

a receiver connected to said antenna (see [0030], radio, telephone, wired analog, etc. and see Figure 3, 228, receives information from first user and [0040]) to receive a frame of information (e.g. The receiver receives the packets of information from first user)

a voice activity detector (see [0036], VAD determines if voice activity is present) to detect voice information in said frame see [0036], VAD monitors

packet structures in incoming digital voice stream) (e.g. The determination of the audio information is found by the voice activity detector 220.); and

a jitter buffer (see Figure 3, buffer manager 330) to buffer said information during said detection by said voice activity detector (see [0051], [0052], [0042], [0061], where the packets are received by the VAD based on incoming stream and the packets and packet structure and sends it to agent 232 where a packet is received one at a time and the buffer receives the packets to be buffered upon receipt) (e.g. It is obvious to one of ordinary skilled in the art that as the VAD outputs the packets (see Figure 2, output of 220) and sends it to the second device (Figure 3, input into buffer 302) that when new audio data is received by the first device that processing by the VAD will occur while the previous packets are being buffered. Support for this in Gentle is seen in [0052], where the VAD monitors for new data) (e.g. The sending of the jitter delay in [0051] from the adaptive playout unit further supports the determining (VAD decision) and jitter buffering being done concurrently.), sending the adjusted packets to a voice codec (see [0075], where the adaptive playout unit is placed before the codec and in [0043], [0045], the jitter timing module has an adaptive control of FIFO delay) (e.g. It would have been obvious to one of ordinary skilled in the art to have used this embodiment in order to for the playout unit to receive encoded packets rather than decoded packet, where additional delay is present due to processing).

wherein said voice activity detector receives frames of audio information, measures at least one characteristic of said frames (see [0051], [0036], and [0004], where the Reference discloses convention technique and shows an alternative based on silence threshold to determine voice activity and energy level measurements and (see [0036], packet structure), determines a start of voice information based on said measurements (see [0052], VAD 220 determines silence or nonsilence as well as beginning and endpoints), determines an end to said voice information based on said (see [0052], VAD 220 determines silence or nonsilence as well as beginning and endpoints) and a delay interval (see [0051], timing measurement module used to determine jitter by VAD 220), adjusting of the delay interval (see [0043], timing measurement module allows adaptive control of FIFO delay)

However, Gentle does not specifically teach the measuring, adding, and adjusting of the delay interval based on an average packet delay time.

Dowdal teaches

measuring an average packet delay time by said jitter buffer (see Dowdal, (see col. 4, lines 33-60, delay between packets are calculated and a calculated running average is maintained in order to reset the value of the FIFO buffer for playout)

adding said average packet delay time to each of the plurality of packets prior to sending the plurality of packets (see col. 2, lines 42-44 and col. 3, lines 34-41, where the playout delay is adjusted based on the calculated delay value.

It is implied in Dowdal that the calculated delay is added (either a negative or positive value is applied).

the adjusting said delay interval to correspond to an average packet delay time (see col. 4, lines 33-60, delay between packets are calculated and a calculated running average is maintained in order to reset the value of the FIFO buffer for playout).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the voice based packet network as taught by Gentle with the use of a delay based on the average packet delay time as taught by Dowdal. The motivation to have combined the two references involves the improvement in audio quality for effective playout of audio by minimizing jitter and delay (see Dowdal, col. 1, lines 15-21).

As to claim 13, Gentle in view of Dowdal teaches all of the limitations as in claim 9, above.

Furthermore, Gentle teaches said voice activity detector further comprises

an estimator to estimate energy level values (see [[0051], energy level measurement by VAD 220) (e.g. Energy levels are estimated.);

a voice classification module connected to said estimator to classify information for said frame (see [0051], VAD 220 classifies based on silence or non-silence)

7. Claims 2, 3, 12, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gentle in view of Dowdal, as applied to claims 1, 9, and 14 above, in view of Clemm (US 6,865,162).

As to claims 2 and 15, Gentle in view of Dowdal teach a voice based packet network.

However, Gentle in view of Dowdal. does not specifically teach the buffering of a portion of said audio information in a pre-buffer for a predetermined time interval.

Clemm does teach the use of a buffer (see col. 2, line 31) for a predetermined time (see col. 2, lines 31-33) prior to said determining (see Figure 1, elements 110 and 120 and col. 2, lines 30-37) (e.g. A pre-buffer is used.).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the voice based packet network as taught by Gentle in view of Dowdal with the buffer before the voice activity detector as taught by Clemm. The motivation to have combined the two references involve the elimination of clipping associated with voice activity detector directed during silence suppression (see Clemm col. 2, lines 47-48).

As to claims 3 and 16, Gentle in view of Dowdal teaches all of the limitations as in claims 1 and 13, above.

Furthermore, gentle teaches sending said information from the jitter buffer to an end user (see Figure 3, second user, 312) (e.g. The applicant denotes the

endpoint to be defined as the human user (see Applicant's Specification, page 8, [0018], lines 5-6).(Further, the sending of audio information to the user from the pre-buffer would have been apparent with the teaching presented by Clemm to avoid clipping).

As to claim 12, Gentle in view of Dowdal teach all of the limitations as in claim 9.

Furthermore, Gentle in view of Dowdal *et al.* teach a voice packet based network.

However, Gentle in view of Dowdal do not specifically teach the buffering of a portion of said audio information in a pre-buffer for a predetermined time interval.

Clemm teaches further comprising a buffer to store pre-threshold speech during detection by voice activity detector (see Figure 1, elements 110 and 120 and col. 2, lines 30-37) (The reference buffers a pre-threshold speech based upon two values, from a delay.)

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the voice based packet network as taught by Gentle in view of Dowdal with the buffer before the voice activity detector as taught by Clemm. The motivation to have combined the two references involve the elimination of clipping associated with voice activity detector directed during silence suppression (see Clemm ,col. 2, lines 47-48).

8. Claims 8, 10, 11, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gentle in view of Dowdal as applied to claim 9 above, and further in view of Sih *et al.* (US 5,920,834).

As to claims 8 and 20, Gentle in view of Dowdal teaches all of the limitations as in claim 1 and 14, above.

Furthermore, Gentle teaches retrieving a frame (see Figure 2, output of 212) of audio information from said packets (e.g. Audio information in the form of voice is received, which has undergone pulse code modulation);

canceling echo from said frame of audio information (see echo canceller 216); and

sending said frame of audio information to a voice activity detector (see Figure 6, output of echo canceller 216 to input of VAD 220).

However, Gentle in view of Dowdal do not specifically teach the receiving of an echo cancellation reference signal.

Sih does teach receiving an echo cancellation reference signal (col. 6, lines 14-18) and Figure 2, echo canceller 10, z'(n) is the reference signal.);

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have modified the voice based packet network as taught by Gentle in view of Dowdal with the use of a reference signal to cancel echo as taught by Sih for the purpose of noise suppression (see Sih, col. 3, lines 5).

As to claim 10, Gentle in view of Dowdal teach all of the limitations as in claim 9.

Furthermore, Gentle in view of Dowdal teach a voice packet based network.

However, Gentle in view of Dowdal do not specifically teach the echo canceller connected to a receiver to cancel the echo.

However, Sih *et al.* does teach the echo canceller being connected to a receiver (see Figure 1, elements 14 and 10) (e.g. It is evident that a transceiver consists of a receiver and a transmitter).

It would have been obvious to one of ordinary skilled in the art at the time the invention was made to have the echo canceller connected to a receiver. The motivation to have combined the two references involves cancellation of echo for mobile phones that may occur in speech signals (e.g. see Sih *et al.*, col. 23-25) as would have been apparent in the teachings of Gentle, which describes communication between telephony devices.

As to claim 11, Gentle in view of Dowdal in view of Sih *et al.* teaches all of the limitations as in claim 9.

Furthermore, Sih *et al.* teaches a transmitter (see Figure 1, element 14) (e.g. Transceiver consists of a transmitter) to provide an echo cancellation signal to said echo canceller (see Figure 1, element 10 and col. 6, lines 14-18).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Harada (US 5,897,615) is cited to disclose speech packet transmission system that incorporates delay. Aoyagi (US 6,678,660) is cited to disclose buffer control for voice packet decoder. Suzuki (US 6,985,501) is cited to disclose reduction of jitter in data transmission. LeBlanc (US 2002/0075857) is cited to disclose jitter buffer and lost frame recovery.

10. .Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARAS SHAH whose telephone number is (571)270-

1650. The examiner can normally be reached on MON.-THURS. 7:00a.m.-4:00p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571)272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R Hudspeth/
Supervisory Patent Examiner, Art Unit 2626

/Paras Shah/
Examiner, Art Unit 2626

06/04/2009